

REMARKS

**Claims 1 through 7 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Arimondi et al. in view of Nagayama et al.**

In the statement of the rejection the Examiner asserted that Arimondi et al. disclose a method for preparing an optical fiber preform having holes for air holes, and drawing the optical fiber preform into a fiber with the air holes. The Examiner admits the obvious fact – Arimondi et al. are **silent** with respect to the manipulative step of heating the drawn optical fiber in an additional furnace downstream of the drawing furnace. Nevertheless, the Examiner concludes that one having ordinary skill in the art would have been motivated to modify the method of Arimondi et al. by including the step of heating the drawn optical fiber in additional furnace downstream. The reason offered by the Examiner is that Nagayama et al. disclose the use of an additional heating furnace. The Examiner asserts that the combination would have been obvious to ensure proper annealing, but makes no apparent effort to establish that the primary reference to Arimondi et al. is defective for improper annealing or that one having ordinary skill in the art would have expected any benefit from such a combination. This rejection is traversed.

Applicants submit that the requisite fact-based realistic motivation for combining the applied references has not been established. Specifically, in order to establish the requisite realistic motivation, the Examiner is required to make clear and particular **factual findings** as to a **specific** understanding or specific technological principle and then, based upon such facts, explain **why** one having ordinary skill in the art would have been realistically impelled to modify **particular** prior art, in this case the **particular method disclosed by Arimondi et al.**, to arrive at the claimed invention. *In re Lee*, 237 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002); *Ecolchem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir.

*2000*); *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999); *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). Further, the requisite motivation must be undertaken with a reasonable expectation of success and that reasonable expectation of success must stem from the applied prior art. *Velandier v. Garner*, 348 F.3d 1359, 68 USPQ2d 1769 (Fed. Cir. 2003); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

### **THE ASSERTED MOTIVATION IS NOT SUPPORTED BY FACTS**

In applying the above legal tenets to the exigencies of this case, Applicants submit that the Examiner did not discharge the initial burden of establishing the requisite realistic motivation for several reasons. Firstly, the asserted reason underpinning the motivation is “in order to ensure proper annealing, as taught by Nagayama et al.” (Paragraph bridging pages 2 and 3 of the February 23, 2006 Office Action.) Applicants question: **Where** is that in the applied prior art? It is true that Nagayama et al. employ an annealing furnace. That is because Nagayama et al., in general, require annealing. But it does not automatically follow that any and all methods of forming optical fibers require annealing, regardless of the specifics of the method proposed to be modified. Thus, it is apparent that the Examiner did **not** address the **specific** methodology of Arimondi et al. or explain why one having ordinary skill in the art would have been realistically impelled to modify the **specific method** of Arimondi et al. by employing an additional annealing furnace, with any reasonable expectation of successfully achieving some benefit.

Further, the Examiner’s asserted motivation “to ensure proper annealing” improperly presumes that the method of Arimondi et al. is inadequate for lack of proper annealing or

requires annealing. Any such **assumption** is without the requisite **factual** basis. Indeed, there is not even a whiff of the need to subsequently anneal in Arimondi et al.

**THE PROPOSED MODIFICATION IS INCONSISTENT WITH ARIMONDI ET AL.**

Quite significantly, the Examiner's improper assumption runs contra to Arimandi et al. This is because one having ordinary skill in the art would have understood that the methodology of Arimondi et al. not only does **not** lend itself to an additional annealing furnace, and that the interposition of any such additional annealing furnace is **antithetic** to the results desired by Arimondi et al. In this respect the Examiner's attention is invited to cooling device 81 which is situated under the furnace 74 and diameter sensor 80 which may be, for example, of a type having a cooling cavity designed to be passed through by a flow of cooling gas (paragraph [0089]) and Fig. 5. Moreover, in paragraph [0089], Arimondi et al. disclose that **rapid cooling** of a drawn optical fiber is preferable for the successive processing step, namely, surface coating. Thus, Arimondi et al. clearly **do not** desire additional heating after drawing and clearly **want rapid cooling** for subsequent surface coating. Under such circumstances, it is apparent that one having ordinary skill in the art would **not** have been realistically motivated to proceed **against** the teachings of Arimondi et al., and, notwithstanding the desire of Arimondi et al. to rapidly cool for subsequent surface cooling, apply heat. The law is clear: one having ordinary skill in the art **cannot** be presumed realistically motivated to modify a reference in a manner **inconsistent** with the disclosed objective. See *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992); *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *In re Schulpen*, 390 F.2d 1009, 157 USPQ 52 (CCPA 1968).

### FURTHER BASIS FOR LACK OF MOTIVATION

Applicants would note that the objective of employing the downstream additional heating furnace in accordance with the claimed invention is **quite different** from the objective of Nagayama et al., and further undermines the motivational element. This is because firstly, the primary reference to Arimondi et al., as recognized by the Examiner, relates to forming air holes in an optical fiber. However, the Examiner does not point out wherein Nagayama et al. relate to forming an optical fiber with air holes, because Nagayama et al. do not relate to any such technology. Rather, Nagayama et al. employ a furnace to simply heat a drawn optical fiber such that atoms constituting the glass are rearranged, structural relaxation of the glass is effected, and the virtual temperature of the glass decreased, noting paragraph [005]. However, in accordance with the present invention, the furnace is employed to **stabilize bonds** of SiO<sub>2</sub> adhered to the interfaces of the air holes, noting page 9 of the written description of the specification, lines 6 and 7. As previously pointed out, Nagayama et al. do not relate to formation of an optical fiber containing air holes as in the claimed invention or as in Arimondi et al. The arbitrary intermixing of process steps between different methods, without a cogent technological analysis, fall short of establishing the requisite realistic motivation. *In re Rouffet, supra*.

Based upon the foregoing it should be apparent that a *prima facie* basis to deny patentability to the claimed invention has not been established for lack of the requisite realistic motivation. Moreover, as explained *infra*, there are potent **indicia of nonobviousness** of record that undermine the obviousness conclusion under 35 U.S.C. § 103.

## INDICIA OF NONOBVIOUSNESS

Initially, as previously pointed out, Arimondi et al. clearly **teach away** from positioning any heating furnace downstream of the drawing. Such a **clear teaching away** from the claimed invention by the primary reference constitutes a **potent indicium of nonobviousness** which cannot be ignored. *Ecolchem Inc. v. Southern California Edison, Co.*, *supra*; *In re Bell*, 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986); *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983); *In re Marshall*, 578 F.2d 301, 198 USPQ 344 (CCPA 1978).

Further, the present invention addresses a particular problem attendant upon conventional practices of forming an optical fiber with air holes. That problem, as disclosed in the first full paragraph on page 2 of the written description of the specification, is a decrease in the transmission loss. In order to address that problem Applicants “conducted intensive studies” and found that the transmission loss is due to Rayleigh scattering at the interfaces of the air holes (paragraph bridging pages 4 and 5 of the written description of the specification). After further studies, Applicants discovered the source of the problem, i.e., that when the microstructured optical fiber is removed from the drawing furnace and cooled, the produced SiO<sub>2</sub> gas adheres to the interfaces of the air holes, and SiO<sub>2</sub> is frozen before becoming stably bonded because the cooling rate of the optical fiber removed from the drawing furnace is 5000°C/second or higher (second full paragraph on page 5 of the written description of the specification). Appellants addressed and solved that problem by providing the method set forth in independent claim 1 which requires, *inter alia*, the use of an additional heating furnace subsequent to drawing, wherein the optical fiber is heated to a temperature range of 900°C to 1300°C.

The problem element generates **two indicia of nonobviousness**. First, it is well settled that the **recognition of a source of a problem** attendant upon conventional practices is, in itself, an **indicium of nonobviousness**. *In re Spinnoble*, 405 F.2d 578, 160 USPQ 237 (CCPA 1969). Secondly, it is well settled that the **problem** addressed and solved by a claimed invention must be given consideration as a potent indicium of nonobviousness, particularly wherein the alleged teaching reference, Nagayama et al., does not even relate to the same subject matter as the primary reference to Arimondi et al., i.e., forming an optical fiber with air holes, and hence, does not even begin to envision the problem addressed and solved by the claimed invention. *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989); *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975).

## **CONCLUSION**

Based upon the foregoing it should be apparent that a *prima facie* basis to deny patentability to the claimed invention has not been established for lack of the requisite realistic motivation. Moreover, upon giving due consideration to the potent indicia of nonobviousness of record, stemming from the clear teaching away from the claimed invention by the primary reference to Arimondi et al., and, Applicants recognition of the source of a problem attendant upon prior art practices, and the failure of the allegedly teaching reference to Nagayama et al. to even envision the problem addressed and solved by the claimed invention, the conclusion appears inescapable that one having ordinary skill in the art would **not** have found the claimed

subject matter **as a whole** obvious within the meaning of 35 U.S.C. § 103. *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984).

Applicants, therefore, submit that the imposed rejection of claims 1 through 7 under 35 U.S.C. § 103 for obviousness predicated upon Arimondi et al. in view of Nagayama et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

**Claim 8 was rejected under 35 U.S.C. § 103 for obviousness predicated upon Arimondi et al. in view of Nagayama et al. and Kuwahara et al.**

This rejection is traversed. Specifically, claim 8 depends from independent claim 7. Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 103 for obviousness predicated upon Arimondi et al. in view of Nagayama et al. and Kuwahara et al. The additional reference to Kuwahara et al. does not cure the previously argued deficiencies in the attempted combination of Arimondi et al. and Nagayama et al.

Applicants, therefore, submit that the imposed rejection of claim 8 under 35 U.S.C. § 103 for obviousness predicated upon Arimondi et al. in view of Nagayama et al. and Kuwahara et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

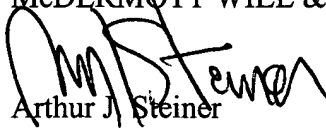
Based upon the foregoing it should be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

**Application No.: 10/764,454**

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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